

IN THE CLAIMS

Please amend claim 20 as follows:

20. (Currently Amended) An electrode structure adapted for use with a fuel cell system, characterized in that the electrode structure comprises a silicon substrate having one or more selectively doped regions thereon, wherein each of the one or more selectively doped regions has a resistivity of approximately 50 m Ω cm and is adapted to function as a current collector for the transmission of an electrical current, and wherein the silicon substrate further comprises one or more discrete porous bulk matrix regions disposed across a top surface, wherein each of the one or more discrete bulk matrix porous regions is defined by a plurality of pores that extend into the silicon substrate, wherein the plurality of pores defines inner pore surfaces, wherein the inner pores surfaces have catalyst particles uniformly dispersed thereon, and wherein the one or more selectively doped regions corresponds to the one or more discrete porous bulk matrix regions, and wherein the plurality of pores are interconnecting mesoporous acicular pores, interconnecting macroporous acicular pores, or a combination thereof.

Please add the following new claims 21-25:

21. (New) The electrode structure of claim 20, wherein each of the one or more discrete bulk matrix regions is defined by a plurality of pores that extend into and through the silicon substrate.

22. (New) The electrode structure of claim 20, wherein the silicon substrate has a top surface and a bottom surface, and wherein the plurality of pores that extend into the silicon substrate are perpendicularly aligned with respect to the top surface and the bottom surface.

23. (New) The electrode structure of claim 20, wherein the silicon substrate has a top surface and a bottom surface and wherein the plurality of pores that extend into the silicon substrate are angularly aligned with respect to the top surface and the bottom surface.

24. (New) The electrode structure of claim 21, wherein the silicon substrate has a top surface and a bottom surface, and wherein the plurality of pores that extend into and through the silicon substrate are perpendicularly aligned with respect to the top surface and the bottom surface.

25. (New) The electrode structure of claim 21, wherein the silicon substrate has a top surface and bottom surface, and wherein the plurality of pores that extend into and through the silicon substrate are angularly aligned with respect to the top surface and bottom surface.